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Post-emergence applied Herbicides for Weed Management in Soybean

Abstract

The purpose of this study was to evaluate various Touchdown and Roundup UltraMAX rates and post-emergence application timings for crop phytotoxicity and weed control in a glyphosate-resistant soybean.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Post-emergence applied Herbicides for Weed Management in Soybean

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Introduction

The purpose of this study was to evaluate various Touchdown and Roundup UltraMAX rates and post-emergence application timings for crop phytotoxicity and weed control in a glyphosate-resistant soybean.

Materials and Methods

The crop rotation was soybean following corn. The seedbed was prepared by a chisel plow in the fall, followed by a spring field cultivation. Crop residue was 45% at planting. A randomized complete block design with three replications was used. Herbicides were applied in 20 gallons of water/acre. Visual estimates of crop injury and percentage weed control were made during the growing season. These observations are compared with an untreated control and rated on a 0–100 rating scale (0% = no control or injury; 100% = complete control or crop kill).

On May 10, 2001, 'Asgrow variety 2302 RR' soybean was planted at 189,407 seeds/acre in 30-inch rows. Post-emergence (POST1) and POST2 treatments were applied on June 28 and July 6, respectively. On June 28, soybean growth was V3 to V4 and 5–7 inches tall. On July 6, soybean were at the V5 growth stage and 11–13 inches tall. Weeds had 2–numerous leaves and were 2–6 inches tall on June 28; while on July 6, weeds had numerous leaves and were 8–14 inches tall. Weed species occurring in this study included giant foxtail, common lambsquarters, common ragweed, common waterhemp, and velvetleaf, with an average population of 15, 1, 1, 2, and 1 plants/ft², respectively.

Results and Discussion

The results of the study are summarized in Tables 1, 2, and 3. No soybean injury was observed on July 6, eight days after POST1 application timing. On July 13, seven days after POST2 application and 15 days after POST1 application, soybean injury, in the form of chlorosis, was evident in all treatments. On subsequent observation dates, injury again was observed in nearly all treatments; on August 22, it ranged from 0–12%. Injury was greater with POST2-applied Touchdown treatments than with POST1. However, no trend was observed with any particular application rate or whether application occurred with or without Ammonium Sulfate. Injury observations on July 27 and August 22 reflected stunting, not chlorosis. Soybean height measurements on August 20 generally indicated that treatments with more soybean injury resulted in shorter plants.

Giant foxtail, velvetleaf, common waterhemp, common ragweed, and common lambsquarters control was excellent on July 13, 19, and 27 with all POST1 and POST2 applied Touchdown and Roundup UltraMAX treatments, regardless of rate and whether it occurred with Ammonium Sulfate. Control continued to be excellent when evaluated on August 22. All treatments yielded significantly more than the untreated check. Several POST2-applied Touchdown treatments yielded significantly less and generally reflected the injury and shortened soybeans associated with these treatments.